DOCUMENT RESUME

ED 196 769 SO 013 050

AUTHOR Wolf, Robert L.; Tymitz, Barbara L.
TITLE "Do Giraffes Ever Sit?": A Study of Visitor Perceptions at the National Zoological Park, Smithsonian Institution.
INSTITUTION Smithsonian Institution, Washington, D.C. Office of Museum Programs.
PUB DATE Mar 79
NOTE 61p.: Some pages at the beginning of the document may not reproduce clearly.

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS Educational Needs; Evaluation Methods; Interviews; *Public Opinion; Recreational Facilities; Surveys; *Use Studies; *Zoos
IDENTIFIERS Smithsonian Institution

ABSTRACT

This study explores why people come to the National Zoological Park, the value of their visit, what they learn, and how the overall experience of visiting the zoo affects them. The study was undertaken over six months. It is part of a series to evaluate how various bureaus of the Smithsonian Institutions influence the public through their diverse programs and exhibits. The major objective is to provide the zoo staff with a type of information that will help them improve zoo practices. The document is presented in six sections. Section I offers an overview of the study. Section II explains methodology. Procedures included gathering a fact finding team (composed of zoo staff members, psychology interns, volunteers, and a methodologist), conducting interviews with zoo staff and visitors, observing visitor behavior, analyzing data from interviews and observations, and preparing a final report. Section III provides descriptive data on visitors--age, sex, occupation, residence, etc. Section IV analyzes and discusses data. Findings indicated that people came to the National Zoo for reasons of tradition, relaxation, entertainment, education, and to observe animals which might soon be extinct. They expressed particular concern for animal comfort, zoo cleanliness, and a non-crowded environment. They most enjoyed observing the animals and questioning zoo tour guides for further information. Many respondents indicated a need for self-guided tours. Section V identifies areas for additional study, including providing for specialized learning and guarding against misconceptions. The final section offers conclusions. A major conclusion was that visitors are more knowledgeable and curious than ever before. Implications for the zoo staff are discussed. (DB)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED196769

BEST COPY AVAILABLE

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

"PERMISSION TO REPRODUCE THIS MATERIAL IN MICROFICHE ONLY HAS BEEN GRANTED BY

Jane R. Glaser

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

"DO GIRAFFES EVER SIT?":

A STUDY OF VISITOR PERCEPTIONS AT THE NATIONAL ZOOLOGICAL PARK, SMITHSONIAN INSTITUTION

by

Robert L. Wolf, Ph.D.
Evaluation Studies
Office of Museum Programs
Smithsonian Institution

Barbara L. Tymitz, Ph.D.
Indiana University

March 1979

Prepared with the Assistance of:

Thomas Brown
Suzanne Hodges
Mary Ellen Munley
Emily Rudin
and
Samantha Wolf (age 6)

PREFACE

"Zoos can teach you not just about animals but about life. Right here are things my family and I could never see anywhere else. The animals are beautiful. You know, things come and go but people fight to preserve things because they are beautiful. That's part of life. I want my kids to understand that man and these animals share the earth and the environment. That's the way it's suppose to be. Somehow, you should go to the zoo."

"When my grandson listed the things that made him happy, he listed cake, pie and the zoo . . ."

"I'll continue to come to the zoo because my chances of finding a gorilla anywhere else are mighty slim."

"It's good that you want to improve. Every place can stand improving. I think the best thing you're doing is to ask the people who come here what they think about the place."

DEC 1980

TABLE OF CONTENTS

OVERVIEW	1
METHODOLOGY	3
DESCRIPTIVE DATA	7
Visitor Demographics	7
Data Collection Episodes	9
Questions and Probes	10
ANALYSIS AND DISCUSSION	12
And What Made You Come to the Zoo Today?	14
Affective and Cognitive Impacts	21
How and What People Would Like to Learn	40
AREAS FOR CONSIDERATION AND FUTURE STUDY	44
Providing for Specialized Learning	44
Guarding Against Misconceptions	49
On the Issue of Transfer	51
Future Study	52
CONCLUSION	54
BIBLIOGRAPHY	55
APPENDIX	56

OVERVIEW

This study is part of an on-going commitment by the Department of Psychological Studies, Smithsonian Institution to help various bureaus of the Smithsonian understand the impact they have on the public through their diverse and specialized programs and exhibits. Several studies have already been completed that examine the impact of museum exhibits, and this study represents a first attempt by the Department of Psychological Studies to explore visitor perceptions at the National Zoological Park. In fact, our review of the existing literature on research and evaluation studies in zoo environments suggests that very few studies of visitor impact exist. Those that have been accomplished have been concerned either with demographic analyses of visitors or with observations of visitor behavior. A small number of surveys have also been undertaken to examine visitor satisfaction. This study, however, departs from the more traditional approach and focus. It is aimed at understanding visitor perceptions of the zoo experience. Why people come to the zoo, the value of their visit, what they learn, and how the overall experience impacts upon them have been the object of this inquiry. In this sense, the present study is unique.

The methods employed in this exploration are unique as well, and we refer to them as Naturalistic Evaluation. They are naturalistic because we observe and interact with persons as they engage in their visit. We approach them naturally, we engage them in natural conversation, and we document their natural behavior. It is evaluative because we ask the visitor to assess the quality of his/her experience and to comment on what meaning the visit has to him/her. This strategy of combining observation and interview procedures has proven to be extremely helpful in revealing subtle aspects of visitors' experience and the kinds of cognitive and affective impact these experiences provoke. Our role is to portray these observations and expressions in such a manner that they are both comprehensible and usable by those who have responsibility for program planning and decision-making.

As with all of the other recent work of the Smithsonian's Department of Psychological Studies the underlying intention of this effort is to provide the Zoo staff with information that can help guide meaningful action leading to improved practice. It is our view that if systematic study does not play a facilitative role in program planning and exhibit development then it is probably not worth the time and energy it takes to conduct it. Because this exploration has been designed to enhance programmatic decision-making, the primary audience for this document is the professional staff at the National Zoological Park. It is for this reason that we worked closely with particular staff members and engaged their support and cooperation at certain critical points in the study process. In fact, several members of the Zoo's Office of Education were trained to help with some of the visitor interviews. This involvement helps to direct the inquiry focus to areas of concern or interest that the staff has so that the entire effort will be viewed as helpful to them. While responding to the needs of the staff is seen as critical to this methodological approach, it is also hoped that others can

benefit from the insights gained through this particular investigation. Museum and zoo professionals elsewhere who are interested in what visitors have to say about their experiences should find this study revealing and useful.

This document is organized into three major sections--Descriptive Data, Analysis and Discussion, and Areas for Consideration and Future Study. Additionally, there is a brief section on methodology and several appendices. Essentially, the Descriptive Data section identifies demographic information regarding the kinds of visitors interviewed and observed, as well as other contextual factors related to each data collection episode--time of day, day of week, weather, Zoo conditions, areas of the Zoo involved, etc. This description is aimed at demonstrating the range of persons, age groups, occupations, and Zoo areas that were included in this investigation. The section on Analysis and Implications contains all of the discussion related to the four major issues under consideration--reasons people come to the Zoo, how the visit impacts upon them both affectively and cognitively, what specific things people learn at the Zoo, and finally, the sorts of things they would like to learn. The final section on Areas for Consideration and Future Study provides suggestions for Zoo staff as to what kinds of changes would be considered to build upon positive aspects of the Zoo environment or to add some dimensions that visitors implied would be helpful. In addition to the specific suggestions offered by the visitors themselves, we relied upon our own professional expertise as educationists to generate points for consideration and questions that could be addressed through continued inquiry. All of the suggestions, however, are rooted in the data or the data interpretations.

One final introductory note. This report has not been written for any one group within the Zoo's organization. While it is true that we did work more closely with the education staff during the course of this investigation, we exercised considerable care at the outset to talk with staff members within other departments. It is believed that the direction of this study was shaped by the sum of conversations we had with administrators, design persons, animal management staff, curators, as well as education personnel. The various perspectives held across these different roles provided a richer context than had we been guided by any single perspective. This point about multiple perspectives is an important one. Our experience suggests that different staff members are likely to interpret these data differently. Some will agree with our inferences and suggestions and some will not. We see this report, therefore, as a provocateur or a point of departure. For some, this entire inquiry effort will serve to confirm intuitions, for others it will shed new light on commonly held perceptions--or misperceptions. Whatever it does for any single individual, it is hoped that the sum of interactions that will occur as a result of its presentation will move the Zoo staff forward in their thinking and their actions. At the very least it should begin some new or renewed conversations and help to alter or substantiate hunches and speculations through empirical documentation.

METHODOLOGY

The methods of Naturalistic Evaluation can be described technically and at length, or can be simplified for more popular consumption. Because this document is not intended as a methodological treatise it was decided that a rather simple, straightforward description of method is in order. More sophisticated discussions of Naturalistic Evaluation can be found elsewhere (Wolf and Tymitz, 1976; 1977a,b; 1978a,b,c; Wolf, 1979).* Naturalistic Evaluation is predicated on the belief that in order to best serve people involved in or affected by museums and zoos, evaluation must guide and inform the decisions that need to be made--that is, evaluation must respond to people's concerns. Additionally, and perhaps most importantly, evaluation must provide an in-depth understanding of what impact the institution is having upon the visitor/consumer. In other words, what kinds of experiences does the visitor have, and what is the value of that experience?

Evaluation strategies are naturalistic if they (1) orient more directly to current and spontaneous activities, behaviors and expressions rather than to some set of formally stated objectives, (2) respond to staff and visitor interests in different kinds of information; and (3) account for the different values and perspectives that exist whenever the question of impact is introduced. Naturalistic Evaluation takes a broad, holistic view of the program or institution, is more interpretative than judgmental, and requires participation from a wide range of people who are to be served by the study effort.

Naturalistic Evaluation is a process which, we believe, is more useful and more comprehensive than most traditional evaluation procedures. It develops iteratively. Issues are identified, discussed and clarified by sampling program participants, administrators, exhibit staff, and of course, visitors. From these discussions new questions are raised; new data are sought; constant feedback is provided; new decision needs arise; and so it goes. Naturalistic Evaluation is not static--the design is not formulated in advance. Rather, the process is dynamic. The study evolves and is modified as the inquiry staff interacts with people in or about the museum or zoo.

In essence, the Naturalistic Evaluation approach is based on the assumption that evaluation should respond to the needs, interests and perceptions of all those involved in or affected by the evaluation study--the audience(s) shape(s) the direction of the inquiry. Philosophically, the approach legitimizes the assertion that there are multiple realities and multiple truths. Thus, unlike the majority of investigatory efforts in museums and zoos, the present approach elicits, considers, and builds upon

---

*Readers interested in obtaining these papers can secure them through the Office of Museum Programs, Smithsonian Institution, Room 2235, Arts and Industries Building, Washington, D.C. 20560.

the in-depth information that is provided by its many respondents. The final data interpretations portray similarities and differences in perceptions while describing the origin and context for such agreements and discrepancies.

Operationally, within this particular study, the following procedures were employed in implementing the Naturalistic Evaluation approach:

1) Negotiations for the study were initiated by the Department of Psychological Studies with key administrators at the National Zoological Park. These negotiations concerned procedural matters such as budget, time frame, etc. as well as substantive matters that related to why such an investigation would be appropriate;

2) An investigation team was assembled and was coordinated by the Director of the Department of Psychological Studies. The team also included an experienced methodologist to direct all field activities, two doctoral interns working in the Department of Psychological Studies, and two members from the Zoo's Office of Education staff (four core members and two volunteers from the Zoo in all);

3) Fact-finding interviews were conducted with staff members across a number of departments at the Zoo to solicit their views on evaluation and to generate initial questions that the study could focus on;

4) Preliminary observations of and interviews with visitors were completed so as to generate possible issues to be studied based upon visitor expressions and recurring demonstrable behaviors;

5) Select members of the Zoo's Office of Education were trained in certain Naturalistic Evaluation techniques, particularly interview and observation strategies, so as to assume limited data collection responsibilities;

6) Preliminary debriefing sessions were held with the core study staff to develop a tentative structure for the investigation based upon all of the information amassed up to that point;

7) Systematic data collection began and focused upon the tentative structure identified during step #6;

8) Biweekly debriefing sessions with core study staff were initiated so as to generate alternative questions, explore different inferences and discuss emerging data patterns;

9) A meeting with a small number of Zoo staff was initiated to

share emerging data themes and to modify and finalize the study's focus;

10) The intensive data collection phase began (several hundred hours of observation and over 300 visitor interviews during a six-week interval);

11) Regular debriefing sessions continued with core study staff to begin tentative data analysis, validity cross-checks, problem identification, and new data considerations;

12) The formal analytical phase was initiated to articulate emerging themes, identify consistencies and inconsistencies in data, develop a data categorization structure, and discuss tentative explanations;

13) A pre-report writing meeting with several Zoo staff to present the analytical framework and emerging insights so as to solicit any new suggestions for examining the data;

14) Final analysis and report preparation continued; and

15) A final debriefing with representatives across Zoo departments was convened to explain findings, respond to questions and discuss new study directions and implications for planning and development.

In all, the study took six months to complete from the initial set of negotiations to the final debriefing session. Three hundred visitor interviews were conducted. Other formal interviews and informal interactions occurred with Zoo staff and visitors. Additionally, many hours were spent watching groups, couples, and individuals of all ages experience the Zoo. Data collection episodes occurred in all types of weather conditions ranging from warm, humid Indian summer days to cold, blustery winter mornings. Different areas of the Zoo were investigated including both indoor and outdoor exhibits.

As with other studies that we have completed utilizing this methodology, the experience has been extremely provocative to us as inquirers. The extensive field work demanded by Naturalistic Evaluation allows a kind of intimacy with the study that is simply not attained through other more conventional study approaches. The excitement generated as a result of this effort prompted us to become avid readers about zoos and about exotic animals, for that matter. We view this stimulation as healthy and a sign of our interest in and commitment to the way these data will be interpreted and used. We have gone to great length in separating out our own perceptions and/or expressions from those of the visitors, and where we have made suggestions they are clearly identified as our own. The report is replete, however, with many natural language statements that were expressed by the many informants who responded to our questions and our probes. These statements are included because we believe that nothing speaks stronger than the words used

by the visitors to describe their feelings, impressions, conceptualizations and suggestions. It is with this spirit, then, that the data are presented and discussed in the sections that follow.

DESCRIPTIVE DATA

The purpose of this section is to provide specific information as to the kinds of visitors that participated in the study (age, occupation, etc.) as well as contextual information for each of the data collection episodes that took place (where the interviews and observations occurred, weather conditions, etc.). Additionally, descriptions of visitor constellations (single, groups, pairs) are provided as are examples of the kind of questions and probes that were employed in the interview process. Primarily, the intention here is to provide the reader with insight into the extensiveness of this study effort, and offer the needed contextual information for interpreting later sections of the report. Most of this information will be briefly summarized into three categories: Visitor Demographics, Data Collection Episodes and Question and Probes.

VISITOR DEMOGRAPHICS

Our interview sample included visitors from 38 states and four foreign countries. The regional representation was excellent and included 12 states from the Northeast, six from the South, 13 from the Midwest and seven from the West. Because we approached people on a stratified random basis (the sample selection was stratified because team members were asked to identify as many visitor constellations as they could and then attempt to select an equal number of visitors across each strata), there is reason to believe that at any given moment some visitors representing all geographical areas in the country would be present in the Zoo. This fact is good to know for future study, particularly a study that would be comparing zoo experiences at the National Zoo with zoos elsewhere.

From these 38 states and four foreign nations we are able to identify 84 distinct visitor constellations with people ranging in age from infants to octogenarians. Approximately 75% of our interviews, however, were conducted with people between the ages of 20 and 50. A small percentage of teenagers were interviewed, and almost all of the interviews with children occurred in the presence of their parents and/or grandparents. In fact, we were surprised at how many visitor constellations included some members of extended family groupings (child, parent, grandparent). Additionally, our data reveal quite clearly that more people visit the zoo in some paired or group situation than they do alone. In all, 84 different visitor constellations were identified with the most frequent interview occurring with single parents with one or more children. Predictably, there were more mother/child(ren) constellations during the week and more father/child(ren) constellations on the weekend.

BEST COPY AVAILABLE

Interviewers were instructed to talk with an equal number of male and female visitors, and our interview sample represents all racial groups. No substantial differences emerged in our analyses across racial groupings. Visitors interviewed in this study came from all different walks of life. One hundred and twenty-five different occupations were represented in all. The following list will provide the reader with an idea as to the range of persons who participated in the study:

G. E. Sales Representative
Grandparent
College Student
Professor-Political Science
Engineer-Dept. of Transportation
Lithographic Plate Maker
Air Force Officer-retired
Secretary
Retired Bus Driver
Machinist
Professor-U. of Maryland
Experimental Psychologist-Army
Chicken Breeder
Smithsonian Regent
College Teacher-P.E.
Military Civil Service
College Administrator
Junior High School Student
Management Consultant
State Department Researcher
Statistician
Switchboard Operator
Marketing Economist
Therapist
HEW Government Worker
Minister-retired
Fisherman
Veterinarian Assistant
Park Architect
Architectural Photographer
Financier-unemployed
Actor
Medical Student
Elevator Operator
Zoologist

Housewife
Primate Lab Worker
Artist
Glass Maker
High School Student
Fence Builder
Businessman
Lab Worker
Lumber Mill
Accountant
Teacher
Typist
Embassy Secretary
Landscaper
Dental Technician
Interior Decorator
Painter, Plasterer
Seamstress
High School Teacher
Mover
Zoo Guide
Printer
Plumber
Nurse
Auto Worker
X-Ray Technician
Waitress
Navy Officer
Speech Therapist
Meteorologist
Wildlife Artist
Airline Worker
Former Teacher
Supermarket Clerk
School Bus Driver

Street Cleaner
Taxi Driver
Government Film Crew
Coast Guard
Cook
Construction Worker
Lawyer
Food Manager
Carpenter
Nurse
Psychiatrist
Reporter
Consumer Affairs
Early Child Specialist
Drapery Cleaner
Waiter
Architect
Photographer
Brewery Worker
Oceanographer
County Commissioner
Bookstore Manager
Millworker
Bank Clerk
Journalist
Scientist
Hotelier
Psychologist
Economic Analyst
Publisher
Physical Anthropologist
Graphic Artist
Dietary Aide
Fire Fighter

. . . . . and children of all ages

In sum, persons from different backgrounds, of different ages and from different parts of the country shared their thoughts with us about their zoo visit. While those participating did not represent a randomized sample in a statistical sense, it certainly is fair to say that they represented a selection of typical visitors with great demographic diversity. There is every reason to believe that what was learned by talking to this group of respondents could be replicated by talking with other visitors tomorrow.

DATA COLLECTION EPISODES

We refer to specific observation events and/or each interview as a data collection episode. Interviewers were asked to document each episode by noting the time of day the episode occurred, the place of the transaction, the day of the week and the weather conditions. Essentially, the purpose of this documentation is to insure that such contextual factors do not overly influence what the visitor is reporting to us or the kind of behaviors they are engaged in, or at least to understand to what extent they do influence visitor behaviors or expressions.

Essentially, we found that most of these factors seem not to impact upon the visitor substantially, but there are several issues worth reporting.

While our data collection episodes covered most time intervals between 10:00 a.m. and 4:30 p.m., we found the best times to be between 12:00 Noon and 3:00 p.m. This three hour block provided visitors with ample time to experience at least part of the Zoo and at the same time not to be too fatigued to respond to our questions. In fact, over 90% of the data collection episodes in this investigation took place during those times. Likewise, we found that Thursday through Sunday to be the days where most of our data collection occurred, although we attempted to collect some information each day of the week. It appears as though the more serious zoo-goers visit the Zoo during the least crowded periods and this observation would be worth more focused study.

As stated in the overview section of this report, we collected information during all kinds of weather conditions. Again, these differences did not account for any substantial variations in the data. Most visitors view the zoo as primarily an outdoor experience so even if they come on a rainy day they still try to stay mostly outside. There were some differences in responses, however, but these related to concern about the animals and not to weather conditions.

In general, most visitors were slightly more negative about their zoo visit when they were interviewed inside as opposed to outside. Certainly, there was more concern voiced regarding animal incarceration when people viewed an indoor exhibit that they believed to be too confining. These kinds

BEST COPY AVAILABLE

of sentiments seemed to generalize to all indoor areas, and were not exaggerated by any one indoor house in particular.

Data collection episodes occurred both inside and outside the following areas: Lion-Tiger (60 interviews), Elephant-Giraffe (74 interviews), Panda (52 interviews), Bird House (45 interviews), Small Mammal House (31 interviews), Reptile House (21 interviews), and Other (Wildebeast, Gorilla cages, etc. (17 interviews)). While the indoor/outdoor dimension had a slight effect on the visitors' affect, the specific area did not. For the most part, the area where persons were interviewed were unrelated to their responses -- visitors seemed to generally respond to their whole experience at the Zoo, not to any specific aspect of it.

What is interesting about all of the descriptive data presented above is that while it demonstrates great variation in people and circumstances, the variation itself does not alter the outcomes significantly. If anything, this fact speaks to the generalizability of these data beyond this particular sample.

QUESTIONS AND PROBES

In the preceding section on methodology the point was made that this inquiry approach contoured itself to the way people behaved naturally, and that engaging in natural conversation with visitors was critical. To preserve the naturalness of interactions with visitors, interviewers did not utilize a standard set of questions. Each interviewer knew that he/she was responsible for eliciting information on a number of key issues, i.e. reasons for zoo visit, cognitive and affect impact of visit, what and how people learn, and what people wish to learn. Rather than destroy the spontaneity of interactions by imposing a formal interview format, interviewers were trained in informal interview techniques to get at these important study foci. An example of some of the questions and probes that were employed during the investigation were as follows:

- What made you decide to visit the Zoo today?
- Do you come here often? (If yes) What is it about this place that encourages you to come?
- What have you seen so far?
- Where have you been?
- What kinds of things have you been noticing?
- Did you see anything that you haven't seen before?

- Is there anything any of the animals did that surprised you?

- If you had a choice, what other kinds of things would you like to see?

- Would you like to learn more about what you are seeing here? (If yes) How can the Zoo help you learn those things?

Every question and probe was followed with a more specific one until the interviewer felt that the topic was exhausted and that they began to understand what the visitor was trying to express. Specific behaviors of the visitors that were observed by interviewers were also discussed so that our insights could be tempered by accurate interpretations of what we saw and heard. In the section that follows, the results of these observations and converstions will be presented and discussed. Background descriptive data already identified should help the reader formulate his/her own interpretations.

ANALYSIS AND DISCUSSION

The purpose of this section is to reveal the kind of impact the Zoo appears to have on visitors based upon our systematic observations of and interviews with a wide range of persons. We talked with people as they were actually experiencing the Zoo and we talked with them after we had the opportunity to observe their behavior. Thus, some of our questions related specifically to things we saw them do, or to animal areas that seemed of particular interest to them. We also moved from rather specific and concrete questions about their behavior to more abstract questions about what they learned or how they would like to learn in a zoo. In this manner we tried to help the visitor best articulate their perceptions and at the same time insure that we would elicit the most specific kinds of insights we could.

We were extremely impressed as to how knowledgable many people are about zoos in general and this Zoo in particular. Visitors have a great deal to offer in terms of generating thoughts and ideas that could help the Zoo realize its ultimate potential. Not many institutions can boast of such an informed and interested clientele and we view this as an important factor that zoo staff should take into consideration when they engage in program planning and exhibit development.

Prior to discussing the specific data, several issues need explanation. It is important to make the distinction between analyzing the data and reporting it. Because the two processes are different, they are governed by different decision rules. For example, in developing initial themes or data trends, some information is weighted by the experience or expertise of the informant. In other words, a statement made by a first-time zoo visitor might not be weighed as heavily as a statement offered by a zoo director or avid zoo-goer. In reporting natural language quotations, however, identification is not made as to the kinds of visitors who issued them. Once the trend is established,all of the data is equally weighted. Reading single statements in isolation from all the data that is available would be, in our view, potentially too prejudicial. A far more critical distinction is made in the reporting of information, and this concerns the difference between typical and unique responses. Most of the time when natural language quotations are included they represent typical kinds of statements. If a statement is atypical, idiosyncratic or particularly unique, it will be identified as such. Also, in presenting aggregate information the decision was made not to tabulate percentages of the different kinds of responses offered by visitors. It is our view that once numerical ratings are assigned to judgmental data there is a great tendency on the part of the reader to engage in hyperbole or misinterpretation. Rather, we have intentionally used adjectives such as most, many, some, few or none to help portray aggregate tendencies. If we simply say visitors, then that should imply that almost everyone was in agreement.

One final comment. In our previous work employing Naturalistic Evaluation strategies in museum environments*, we have determined how critical it is to relate certain visitor behaviors to interview responses so as to properly interpret the data. We have even developed a way to classify the different modes that visitors employ in experiencing a particular exhibit. For example, if a visitor spends a very short period of time in an exhibit area, his/her comments would be weighed differently than a visitor who spent a protracted interval of time in the same area. While we still view this as an extremely important consideration, this present study was not set up to validate the point. In the past we have been examining a specific exhibit, whereas this effort covered impact of the entire zoo experience. Therefore, we were not able to monitor enough of any single visitor's behavior across a number of areas to classify them as certain visitor types. We do, however, feel that such a study would be significant and this will be considered at the close of this report.

The discussion in this section will be organized around the following four issues: 1) Reasons why people come to the Zoo; 2) The impact of their visit; 3) What they learn; and 4) What they would like to learn. Each sub-section will now be presented.

---

*See R. L. Wolf and B. L. Tymitz. "Whatever Happened to the Giant Wombat: A Study of the Impact of the Ice Age and Emergence of Man Exhibit," National Museum of Natural History, Smithsonian Institution, 1977.

AND WHAT MADE YOU COME TO THE ZOO TODAY?

If one were to photograph visitors in the Zoo on any given day at any given hour one would see in that snapshot the young and old, families and loners, people of all races, apparel and demeanor. They bring with them their self-selected "zoo-gear" -- sun glasses, cameras, artist pads, tape recorders, binoculars, walking shoes or picnic lunches. Others come unencumbered. But they all come for one reason or another. Most can readily tell why they have come. Like the potpourri of visitors, there are many reasons for a zoo visit and the following represent the predominant ones:

People Come Because It Is The National Zoo

The Zoo holds a unique place in the minds of visitors. Because it is the National Zoo visitors are more compelled to see it as another one of Washington, D.C. monuments. But because it is the National Zoo visitors bring expectations reflecting a feeling that it should be better (or in some way more special) than any other zoo in the country. Visitors bring their experiences from other zoos often expecting the National Zoo to be all inclusive. Thus, depending on the visitor's origin and experiences the National Zoo should have: *"a monorail," "elephant rides," "an audio-cassette guide system," "a petting zoo," "penguins," "a conservatory,"* and *"egg-creams."* Visitors openly compare the National Zoo to other zoos on a variety of dimensions:

> *When people come to the Zoo, like people from other countries, I feel that this should be a show place for them.*
>
> *I've been to zoos in other cities that don't have spaces for animals to roam in. This zoo is better.*
>
> *I'm a zoo-goer and I've been to quite a few. They have quite a collection here but I expected to see the animals in groups, like they are in the wild. I've been to zoos that have that.*
>
> *In the zoos in our country there is not so much concrete. The people can walk on grass or sit on benches in the grass.*
>
> *I figure this Zoo is the crème de la crème. It has some of the most beautiful animals I've ever seen.*
>
> *The National Zoo should set a standard for teaching people about how to appreciate zoos and learn from the things they see here. There is a lot of opportunity here to teach the public that other zoos don't seem to have the resources for. You have incredible animals and you must have some of the leading experts in the country working here -- like with the pandas and the birds. Other zoos aren't that lucky.*

It seems to me that people are becoming more interested in zoos. I'm not sure why but I think it's good. A zoo like this is not something everyone has in their own city.

I live nearby and I come here every couple of months. This is my favorite place to bring people who visit me from out of town because I know that most of my friends can't get to see a zoo like this every day.

People Come Because of Tradition

Visitors state that coming to the Zoo is a tradition. The trip is a regular family activity. It is common to find people who began visiting the Zoo on an annual basis when they themselves were children. Now as parents they make annual visits with their own children. There was a consensus among parents that "*children love animals*" and that a trip to the Zoo is a treat for the children:

We go to the Museum of Natural History and the Zoo. My son is only three years old and these are the two parts of the Smithsonian he really enjoys. We come at least once a month.

My kids love animals. They love to watch them and make up stories about them. This is something we can do as a family. Even though we say we come for the kids, we get a kick out of it too.

I want my children to appreciate animals -- not just like them because they are cute or furry. Animals are part of God's creation. Kids should learn to respect animals like they must learn to respect each other.

I love the National Zoo. I visit about twice a week. I live next door, and I have come to know these animals very personally.

I am a school bus driver. I request at least one field trip to the Zoo each year. I have been coming here since I was a child.

I remember coming to the Zoo when I was small. I sure wish that they still had that section by the seal. You could buy fish from the zookeeper and feed it to the seal. That was my favorite.

Visiting the Smithsonian is a habit with us. We come to Washington about every three years. We try to spend at least one day at the Zoo.

Those who have had contact with the Zoo over the years return because they are aware of the improvements and on-going construction. Improvements in the conditions at the Zoo during recent years have a favorable impression among visitors. Knowing that new construction is planned is an inducement for a return visit.

There is simply no comparison between the Zoo today and the Zoo I knew as a child.

The Zoo is just lovely. It has greatly improved since I was last here -- not just the outdoor areas which are beautiful but even some of the indoor cages have been rearranged so that they are more pleasing to the eye.

I'm anxious to see Beaver Valley open. Over the years I've felt the same way about other new parts of the Zoo. It's good to know that there will be new things happening here.

Whenever there is a new area open, it changes the whole look and feeling of the Zoo. You see things differently -- you look at something you've seen a hundred times and for some reason, you see something you've never seen before.

Coming to the Zoo is part habit for many of the locals, especially the elderly. They follow particular animals over the years remembering their names, their off-spring and their off-spring's whereabouts. A group of elderly people who live nearby stated their frequent visits help them *"check up"* on the animals and to ascertain that all is well in *"our park."* Local people exude a prideful ownership over the entire environment.

People Come for Mental and Physical Relaxation

People visit the Zoo on a nice day. Any day with no precipitation is a "nice day" since people come to the Zoo when the temperature dips and when it swelters. Pleasant weather will only make the visit more enjoyable. To the local people (i.e. those from Maryland, Virginia and the District of Columbia), the Zoo is truly a zoo park. It is a place for mental and physical relaxation -- to get away from it all. Students come as a refuge from the *"pressure"* of exams. A minister comes to *"gain peace of mind."* Some have come *"to watch the changing colors of the leaves"* throughout the fall.

Government workers from all levels view the zoo park as a chance to *"get closer to nature -- to the simple things."* The joggers use the zoo park as a serene passageway on the "trek" through Rock Creek Park. In the middle of a bustling city, the Zoo is a refuge. Its natural terrain is strongly appreciated.

People Come to be Entertained

Many visitors expect the animals to perform, even when it is unnatural or not possible for the animal to do so. Popular animals are those that have an interactive personality, either with other animals in the setting or with the visitor. Visitors gravitate to such animals and are disappointed in a sleeping or placid specimen concluding that *"When there is no movement there is no fun."* One woman commented, *"the rhinos are boring."* Another found the sleeping reindeer *"disappointing."* While the animals are the primary focus for entertainment some visitors commented that they come to watch people. A visitor from Michigan helpfully commented to us:

> *I'll tell you what's really fun -- watching other people. I saw one guy whistling at a snake, trying to get its attention. Can you imagine? Whistling at a snake to get its attention? That's like trying to teach my dog calculus.*

People Come For Educational Reasons

We interpret the meaning and application of education broadly. From our perspective, education includes observation, perception, satisfying curiosity, making sense out of one's observation or experiences, incidental learning and, of course, direct efforts to collect or offer information. While there is sometimes a tendency to equate recreation with play and education or learning with work, we believe this dichotomy is both stereotypic and erroneous. Recreation can include learning -- and learning is not always work. Learning is frequently play! If we asked visitors "What did you learn today?", some would comment, *"I'm not really sure I learned anything"* or *"I didn't come to learn -- I just came for recreation."* Yet <u>every</u> visitor who was observed viewing an animal and subsequently interviewed was able to give information about what he/she observed. Some related specific information based on visual keys (labels); others were able to recite information given by a keeper at the respective area. Although a visitor may not specifically come to the Zoo "to be educated," once in the environment it is apparently unavoidable. Our observations indicate that few visitors totally ignore an active animal; few walk away in the midst of spontaneous statements by a zoo keeper; and few disguise their curiosity having heard the raucous Gibbon cry or attempting, if only for a short time, to find the kiwi in its darkened habitat. We spoke with many people who expressed curiosity as the major reason for their visit.

Some *"just want to see the animals."* These visitors do not express any particular interest in animals nor do they have hobbies or occupations which involve the study of animals. During interviews this type of visitor explains that animals are just inherently interesting. The animal need not do anything special or even be exotic. It is important to them, however, that it be possible to come in close contact with little-seen animals. The experience must be different from seeing pictures of animals, or watching *"'Wild Kingdom,'"* one visitor stated.

Other visitors arrive with curiosity about specific animals for one reason or another. We repeatedly talked with people who described the details of a news story or media event about zoo animals. They have come to *"check out a story they read," "to learn more about what they saw on T.V;"* or simply *"to be able to tell others that they saw the particular animal."* As one man said:

> *I came because I've been reading that the giraffe had a new baby and this sort of thing doesn't happen very much in zoos. I wanted to say I saw it -- like people say they saw King Tut. But I also like to take advantage of things that may only happen once in a lifetime. It makes me feel unique.*

Some people view the Zoo as an environment whose specific purpose is learning. We talked with many parents, for example, who use the Zoo for direct educational purposes. Mothers make regular trips to the Zoo with their young children. Some as young as two years old are taken to the Zoo as frequently as twice a month. The mothers teach their children to identify animals and to learn vocabulary from animal movements, e.g. running, jumping, climbing, etc. Mothers also use the Zoo grounds to teach their children as often as they use the animals themselves. Children are taught the names of trees and flowers, the difference between grass and rocks, etc.

Parents of older children frequently mention the teaching of extinction and conservation as important reasons for their visits:

> *I want my kids to see these animals before they are all gone.*
>
> *I know the Zoo has been trying to breed some of the endangered animals. I want my kids to see them and want to find out more about other ones in danger.*

It's important for the Zoo to give people a better understanding of the total ecosystem which we're all part of. If children could understand this while they're young and developed a respect for ecological balance then maybe in the future we wouldn't have to worry about man contributing to the extinction of animals.

My little boy just said to me that this wouldn't be a very fun world if there weren't animals. It's really stingy not to want to share the earth with them.

Even adults unaccompanied by children often express concerns related to conservation as a purpose for their visit as well:

I would think the real message of zoos these days is conservation. You've got to try to tell people that some of these animals they're seeing are the last of their species, the only ones they'll ever see, and that the Zoo is trying to breed them so they won't become extinct.

When I see some of these beautiful animals here, I have a hard time understanding why and how people can hunt and kill them for trophies.

Reading about animals becoming extinct isn't nearly as vivid as standing here looking at one that may be the last of its kind.

I guess you could say that most people have heard about the fact that certain animals have died out. Personally, I'm interested in seeing which ones have survived and how these animals are being protected.

Still others come to the Zoo seeking information about scientific concerns. An artist claimed that her trips to the Zoo were her only contact with science. Those with occupational interests in animals have more specific reasons for a visit.

A biologist: *I like to assess the quality of the collection at a zoo. This collection is extremely impressive. I have never seen such a varied collection of mammals. The care for the animals is also impressive. It is interesting to note the care the keepers must take in meeting the special needs of this many animals.*

A dietary specialist: *I raise animals myself. I am interested in how the diets of animals are supplemented. How do they arrange for the animal to have a diet which resembles what he would have in the wild?*

There are a large number of student groups that visit the Zoo. The variety in these groups is marked. Many elementary and secondary school groups come to the Zoo carrying activity packets or worksheets to be completed based on zoo information and experiences. Art classes from local colleges use the Zoo collection for drawing animal life studies. Zoology students complete assignments based on their observations.

Finally, visitors of all ages come to practice their skills and indulge in hobbies such as bird observation, amateur photography or reptile identification. Among these, we observed several who visited only the area related to their particular interest, having done so, they exited the zoo park.

The responses visitors gave us as to what made them decide to come to the Zoo were often humorous, sometimes poignant, and frequently quite matter-of-fact. From our perspective, it is clear that each visitor comes to the Zoo with either an implicit or explicit purpose. How visitors react to their experience is discussed in the following section.

AFFECTIVE AND COGNITIVE IMPACTS

As seen in the preceding section visitors come to the Zoo for different reasons and have different expectations for what the visit will be like. Likewise, visitors express variation as to how the visit has impacted upon them in terms of total experience (affective impact) and what specific things they learned (cognitive impact). Each will be described separately.

Affective Impact: The Total Zoo Experience

Concern for the Habitats

Much of the total zoo experience relates to how visitors react to the animals' habitats. With few exceptions, visitors express intense interest and concern about the animals' living areas. People desire that the habitat serve dual purposes -- it must be "good" for the animal(s) and it must be "good" for the visitor. The paradox is that an "appropriate" habitat must meet conflicting criteria including those allowing for:

- animal observation
- animal privacy
- animated behavior
- natural behavior
- ample habitat space
- more specimens and species in the space.

The following comments represent a range of conflicting values:

> *One thing I really do miss is the loss of the trees. They had to cut them down and build new places for the animals. Well, you can't have everything and they are doing good things for the animals.*
>
> *Having more open space for the animals outside makes a better zoo because it is a more natural setting, more realistic.*
>
> *The tiger display was a nice construction. The use of concrete was minimized. It had terraces. It wasn't all rocky like most tiger displays. I also liked the blueness of the pool contrasted with the tiger. It was nice too that there were few obstructions blocking your view.*
>
> *It's good that the animals have space to roam but they have so little privacy. Sometimes you see them huddled*

into a corner. They ought to make spaces where the animal can be alone.

The spaces look more interesting and they go with each animal. The lion cage looks hard like lions. The animals seem more interested in their space too. There is plenty of room for them. You can get close to animals that could hurt you yet they're comfortable and act natural right in front of you. The natural space makes them act natural.

There are only two animals in the Lion House. And what small cages!

There shouldn't be artificial objects in cages like plastic or gravel for elephants and giraffes to walk on.

The animals shouldn't be in bare cages. They should have things to play with.

They should keep more animals together like the baby hippos and the parents.

The pigmy hippos seem hemmed in. There were three in a bath tub back there.

I like to see small groups of the same animal in an area - like the giraffes.

They should have a variety of animals together so that if one is sleeping the others will be awake or active. Maybe you could teach them to take shifts.

It is important to note that we anticipated some visitor consternation about certain animals living in cages. We made a point to find out what specific things visitors objected to concerning how the animals were kept so as to fully understand the varying viewpoints on this subject. The data reveal that visitors are indeed able to provide individual perspectives on the animals' environments. Moreover, they provide specific comments about different areas and also make comparisons between habitats of this Zoo and habitats for the same species elsewhere. It appears as though visitor concern about the habitats is more affective than cognitive. While the majority of visitors cannot specifically identify what the habitat should include for a particular specimen, one criterion is clear: captivity must be comfortable. No visitor explictly stated that any specific animal should not be exhibited; likewise, no one explicitly suggested that any animal be returned to its natural environment. Rather, visitors want and expect to see exotic rare specimens. But the specimens must be situated in what the visitor believes to be satisfactory settings. Habitat design has particular saliency when the animal is large, rare, exotic, very young, or obviously old. (Visitors do not seem to enjoy the old animals, unless they have historic or scientific value.) People will accept an artificial environment if the animal, in their

view, behaves "normally." What people perceive to be neurotic or agressive animal behavior is attributed mostly to captivity and the animal's less than natural habitat.

> *When animals are confined in cages they aren't happy. They don't act normal. The animals looked bored and I don't think that should be since animals should be more fun than people.*
>
> *The monkeys looked like nervous wrecks. There should be padding in the monkey cages.*
>
> *I heard a woman explaining that the gorilla gets upset when teased by visitors who beat their chests and do other annoying things. It makes me realize how frustrated that animal must be.*
>
> *It's obvious to me that people who run zoos want to take good care of their animals. After all, they're investments. You can't expect all animals to adjust to this (captivity). People don't - why should animals?*

While referring to the habitats, visitors summarize their experience as *"depressing," "pleasing," "frustrating," "delightful," "disappointing"* or *"facinating."* The data reflect little question that the visitor reactions to the integrity of the habitats is one primary factor influencing the total zoo experience.

Concern for Cleanliness

We did not systematically pursue the issue of zoo cleanliness in our conversations with visitors, but it did emerge frequently as being an important concern. Visitors commented on the cleanliness of the Zoo grounds and public facilities as well as about the animals' living quarters. All are expected to be clean.* Visitors admire the upkeep of the Zoo grounds -- they have less admiration for the upkeep of the public facilities.

The degree of overall cleanliness in the Zoo is seen as an indicator of the staff's concern for the animals. Clean living quarters (both inside and outside) convey to the visitor that the animal is being cared for. Comments on the cleanliness of the animal environments were positive. Some visitors state that they refuse to enter some of the indoor areas not because they

---

*Since the majority of people describe a zoo visit as an outdoor activity, adding that this is where they prefer to spend their time, the cleanliness and attractiveness of the park receive considerable attention.

are unclean but because of the strong odor permeating the building. Visitors do not equate indoor odors with the lack of cleanliness; however, there is little concern about what causes the odor - only that it is "there" and that it is unpleasant. One visitor had an unusually unique view:

> *I do not enjoy the odors but I think they are important to experience. It helps to remind me that my odors must be just as unpleasant to the animals. It's all relative, you know.*

Concern for Care of Animals

Visitor interest in the design and cleanliness of the habitats is tied to an over-all concern about care of animals in captivity. No visitor indicated that any animal appeared uncared for. Rather, attention was focused on how animals could receive better or the best care. Visitors have many different ideas as to what constitutes better/best animal care:

> *It would be good if the giraffes had more leaves to chew on.*
>
> *The floor in the gorilla cage is concrete. That's too hard on the gorillas feet I think.*
>
> *Do giraffes ever sit? There's no soft place for them to sit. Is that why?*
>
> *Why is the elephant chained up? Doesn't that hurt him?*
>
> *I thought polar bears were white - real white I mean. These don't seem as white. Could there be something in the water to make them white?*
>
> *We saw some zebras fighting with each other. Shouldn't someone be supervising them so they won't hurt each other?*
>
> *The female giraffe is all by herself. Can't she be in the yard with the others?*
>
> *What happens if one of them takes up more room than it's supposed to? I mean what do you do for the other one over in the corner?*
>
> *Do the snakes need more room? Can they stretch out all the way in there?*

In relationship to animal care there is a strong agreement among visitors about two issues. The first is that the Zoo take stronger and additional measures in warning visitors not to feed the animals. Many complain of "anger" and "disgust" observing fellow patrons ignore posted signs.

> One woman commented: *"I think, my god, there is this guy throwing stuff at the elephant and I see the elephant eating it. Along come two more and who knows how many after that? It's criminal. It makes me sick. How can the animals survive? I walk away from here just shaking my head."*
>
> A young couple remarked: *"You hear about what sick people do to kids' candy on Halloween. I wouldn't be surprised if someone tries to do the same to one of these animals. There should be more protection for the animals. I don't come to the zoo to tell other people to obey the signs but <u>someone</u> ought to."*

Secondly, visitors commented that they are influenced by indices of how the animal is cared for, e.g. condition of fur, teeth, body weight, scratches. Behavior of the keeper is closely watched and is judged by visitors also. If, for example, the keeper calls the animal by name, this is taken as an indicator of personalized care. Several visitors questioned why the Zoo has removed animal names from the labels. While there may be some element of anthropomorphic tendencies in the visitors' desire to learn animals' names, our data suggest that for many, naming of the animal counteracts harsh stereotypes of captivity.

<u>Concern for Crowds</u>

We talked with a considerable number of people who planned their zoo visit for a time when the Zoo would not be crowded. Because they have the flexibility to do so, local people are more prone to schedule their visits during predictably vacant periods. Thus, they will come at different times of the day, week and year so as to ensure their enjoyment. Out-of-towners on a return visit to the Zoo also mentioned the desire to avoid crowded periods. Visitors will choose to wait for cool weather or some other factor that will lower attendance. People simply do not enjoy crowded environments, particularly when crowds compete with the purpose of the visit, e.g. mental relaxation, close animal observation, etc. Being confronted with a crowd does negatively impact on the total zoo experience for some:

> *There is a lot of space here for the people. The walks are wide. I like that because it makes you feel more free to move around.*
>
> *I came to be outdoors - not to be crowded in. If its too crowded - I leave -- that's all.*

When there are crowds, you can't really see the animals. People are moving all around you and you just don't stay as long watching anything.

If there's a crowd in an indoor house, I don't go near it. The crowds outside are different. There's more room - it's more open.

Large crowds bother me. I can only deal with them for so long.

Concern for Orientation

We encountered a full range of respondents commenting on the desire to be familiar with, or, at a minimum, have an approximate understanding of *"where things were in the Zoo."* The majority of visitors, including those on a second or third visit appreciate information on the layout of the Zoo. One couple commented:

We depend on a clear layout because we do not enjoy walking in circles and we invariably do. Then we get irritated with ourselves and the whole day gets ruined because we feel like we're wasting time.

A map or guideposts make the visit more *"efficient," "systematic"* or *"organized"* and ultimately, more *"satisfactory."* A tourist from New Mexico summarized the feelings of many when he stated:

I like to know where I am going. I don't have time or the energy to back-track. There are some things I came especially to see and I want to be sure how I can do this right. I don't know if I'll ever get back here - so this is my chance. I don't want to blow it or walk away disappointed that I missed something I traveled 2000 miles to see.

Reactions to the trail system at the Zoo were mixed; some find it easy to follow, others find it confusing. This issue was not specifically focused upon in this study although it was frequently mentioned by respondents. From our perspective, a careful inquiry into this issue is warranted. (See the final section of this report.) Suffice it to say that a sense of orientation is desired by visitors and will ultimately impact on the sum of their zoo experience.

Cognitive Impact: How and What Do People Learn?

Learning through Observations

The most prevalent learning behavior in the Zoo is that of observation. Correspondingly, the word most often used at the Zoo is *"LOOK!"* The visitors' approaches to observation are as varied as the visitors themselves. Observers are patient, benignly mischievous, contemplative, curious and persevering. They also help others observe by pointing out behavior, taking pictures, etc.

Many visitors say they come to the Zoo to see animals. From our perspective, there is no other activity in our society quite like it, and visitors' proclivity to observe is quite resilient. Observation is a behavior which is fundamental to the learning experience in the Zoo. And it is one in which people show varying degrees of skill.

Visitors' observations lead them to interpretations about the animals and about the animals' behavior. It appears as though visitors have two objectives: 1) to get as close as possible to the animal; and 2) to follow a natural sequence of behaviors. Large crowds however, seem to discourage both. With few exceptions, an individual's observation will lead to an interpretation shared between a couple or within a group. Typically, observations and subsequent interpretations focus on the animal habitat, animal structural characteristics and animal activity. The following quotes have been selected from several hundred comments we recorded:

> *I saw the tiger pacing on those tiers - is that what you call them? Well, anyhow, I started counting how many steps he would take in one direction and then how many he would take to walk back. He kept the paces the same, back and forth, back and forth.*
>
> *I could watch the birds in here all day. The way they fly, the way they perch. This area is perfect for them. It's like a tropical garden. They look so natural in here.*
>
> *I could see how the snails need moisture to survive.*
>
> *I thought all turtles needed water. I never realized some of them could live in such dry areas.*
>
> *It looks like they are buidling that new area (Beaver Valley) just like a beaver would.*
>
> *I look at their cages and wonder what they do at night - like do they sleep in the same spot every night?*

Some of the monkeys have vocal pouches that expand like a toad to make noise.

We waited a long time to see the kiwi bird and we did see it, by the way.

The giraffes have such long eyelashes!

These birds are fascinating for a combination of reasons -- not knowing anything about them and all their colors and shapes makes them more interesting to me.

You can see more birds here in 10 or 15 minutes than you would be able to in months of bird watching.

I was watching the lesser pandas. The sign says they are nocturnal -- but I saw them playing in the middle of the day.

We did see the apes being fed but it was not so attractive. They were fed raw eggs and one of them just kind of broke it open and held it in its mouth while the egg dribbled all down the front.

I'm trying to figure out the difference between a dog and a fox.

The kids had to look very closely to find the alligator in the moss.

I was fascinated watching the Polar bears swim underwater. It shows you so much more of how gracefully they can move.

I see things differently when I photograph. I'll watch for awhile and then decide, "that's something I'd like a shot of." When I focus, I usually see more detail.

The way (the aviary) is put together is nice -- you can walk around inside and you have to be more observant to see the birds -- since they blend in so well. You have to look carefully.

It amazed me that those birds could be so suddenly attracted to an insect and move so quickly.

The keepers fed the bats bananas. I didn't know bats ate bananas.

I never realized the lesser pandas lived (or at least) spent a lot of time in trees.

I enjoy seeing the animals acting naturally. Providing the swings and ropes in the monkey house gives them an opportunity to do what they would normally be doing.

I didn't know you could tell an elephant anything. (i.e. visitor observed that elephant appeared to listen to the keeper)

An active animal is more real. I want my daughter to realize these are <u>real</u> creatures.

I learned that the difference between African and Asian elephants was the size of their ears.

After we shook hands with this one monkey, we just stood and watched him for a long time. His hand felt tougher than it looks.

I was surprised they fed rice to the pandas. I thought only plants were fed to them. I'm glad they travelled over here in those large cases too.

It was interesting to watch the panda walk. It moves its feet inward. It just lumbers along kind of pidgeon-toed.

I saw the tigers breath even when I couldn't see my own.

The elephant moves both feet on the same side of its body when walking. The giraffe uses his legs like a lever.

I didn't know giraffes had blue tongues.

While these comments are reflective of the range of visitor remarks, it should be noted that it is common for visitors to characteristically respond in more general terms. The same groupings of animals were mentioned by the majority of visitors in listings of "what I've seen so far today." Visitors report seeing monkeys, elephants, pandas, tigers and bears. They omit listing the deer, antelope or the birds -- even though we observed them spending time watching these species. People seem to fall back on animals they are most familiar with when reporting what they have seen. Initially, visitors describe a general feeling that they are learning simply by being in the same context with animals never before encountered. Specific interview probes were useful in helping visitors clarify their statements. Those we observed who were taking photographs, pointing or leaning toward the animals were more likely to readily verbalize a specific detail. Finally, they express concern that they cannot or will not remember all the detail of their observations after leaving the animals and the Zoo.

On the other hand, while some visitors do make detailed observations, we recorded a number of erroneous interpretations and misconceptions. Predominatly, these are related to animal activity. People identify both psychological and biological attributes to animal actions. Their observations are not always interpreted correctly and comments are typically anthropomorphic. The following statements typify this problem:

I know that the animal wants to come out of there. I can hear him saying: I want to get out. I want to get out. Please help me. I've been in here too long. I want to get out.

It is really very easy to tell if an animal is happy or sad just by watching his expressions -- I watch the eyes.

I can tell how long an animal has been in captivity by the amount of activity displayed by the animal. Sleeping animals have been here longer than more active animals. After they have been here awhile they get used to us. They (the animals) say "Oh, another person..." They aren't that interested in us anymore, and they get bored. The active ones are the new ones.

An active animal is a happy animal.

The elephant doesn't eat very enthusiastically. Maybe he's tired of his food.

The pandas probably want to mate in China so their baby is Chinese--not American.

The animals look so harmless. They're like pets. I'd like to touch more of them.

The Great Apes don't want their picture taken -- or else they'd be more cooperative.

Learning by Listening and Questioning

We observed the interactions of visitors with keepers, Zoo tour guides, behavioral research interns and roving guides. The visitor's desire to ask questions, listen to responses and continue asking is unmistakable. One team member working on this study submitted the following anecdote:

I was standing by the panda yards at 10:30 am on a sunny morning during October. The pandas had just been fed. Five visitors including myself were observing the animals. A roving guide came down the hill (from the giraffe - elephant area) conversing animately with a

teen-age girl. The guide stopped in front of the pandas and commented, "We're watching her diet, you know." Then one of the five visitors asked a question about natural vs domestic bamboo. Other questions followed (e.g. What is the dental structure like?; How much does she eat in a day?; For how many years can breeding be attempted?; What is her routine?; Why are there so few pandas?) A group (approximately 18) of people quickly formed. There were school children, families, couples, single tourists. What impressed me about this interaction was the length of time people were content to listen. Also, that there were questions from virtually every age group. Some people in this group would shift their attention back and forth between guide and animals. Others stared intently at the animal but were obviously listening since their questions were relevant to information the guide had just offered. The guide gave what seemed to be the "ideal" amount of information, since people waited for her to complete her responses. Her approach was informal but knowledgable. The large group remained for 22 minutes. Others lingered after the roving guide walked back toward the giraffe yard. Those who stayed continued observing and apparently conversing about the animal.

The observation as reported above was not unique in our experience. Visitors cluster whenever a keeper starts to offer information. Quite frequently, visitors initiate the interactions with the keepers or research interns. (In fact, many visitors asked us questions about the animals!) Interviews with visitors who asked questions or were in a group to whom a guide or keeper had spoken were unable to relate specific information to us about the content of the interaction. Surprisingly it is not always the gregarious ones who ask the questions. Several people indicated to us that they were curious about the specific animal and sought help from people they thought could help provide information. Even children were not shy and we observed many instances of them asking keepers questions about the animals.

We believe that questioning reflects a desire to learn. It was the second most common form of conversation. The most common form is that of observational directions, i.e. *"look at the giraffe walk," "watch him turn over on his back,"* etc.) And, the questions are numerous at both indoor (i.e. Zoo Lab) and outdoor areas. People are curious about the specimen, the species, and zoo care. Below is a sampling of questions frequently asked:

Is this animal near extinction?

Do hippos run?

Do giraffes ever sit?

Where did you find <u>this</u> animal?

I wonder if bears <u>walk</u> into the water of if they jump into the water?

Is this animal a male or female?

How often does this animal have babies?

How long has this animal been in captivity?

Do the folds on the rhino's skin serve a function?

Why are the horns cut off this animal?

How heavy is the animal?

Does this animal have a name?

What else do you feed him?

What predators does this animal have?

How did you bring this animal here?

Who takes care of this animal?

Does the tiger remember how to run?

How does the Gibbon make that sound?

How do you tell if an animal is hurt or sick?

Where are the animals bred?

Is breeding safe for an endangered species? Can they die?

What causes an animal to be endangered?

Does each bird have a mate?

Do the birds use their calls even though they are captive?

How do you (keeper) get picked to take care of the elephants?

Do animals remember who their enemies are?

How many pounds of food does the Zoo use each day to feed the animals?

What does the zoo do when a mother rejects its babies?

Do the animals know they're in a zoo?

How long will the mother care for the offspring?

Do animals remember their parents when they get older?

Are people in the zoo studying if animals communicate with each other?

Learning by Reading

This form of learning is perhaps the most subtle and difficult to report for a number of reasons:

- One cannot infer that people looking at a label are reading the information; nor can one infer how much of any label was read.
- It is difficult to ascertain prior knowledge so that visitor remarks may not be based on labels.
- Some visitors read for purposes of identification only; others read to get brief overviews; a small number read for more in-depth comprehension. Each of these calls for different reading skills and will yield differentiated levels of recall and learning.

We spoke with no visitors who did not read some labels. Nearly all will read some parts of at least one label in every area visited. One man explained his approach by saying:

It's not that these signs don't have interesting facts on them. I've read some. But I don't read that much anywhere. I come here to just watch I guess.

But for those who were observed to be reading labels, remarks indicate that identification and origin of the animal are what most visitors recall. Also, when people read the labels out-loud to their group, they typically read only the identification and origin information. (Note: It should not be concluded that other label information is ignored or uninteresting. Our

study was focusing on whether people use labels to learn. A more in-depth study to determine what people learn from labels would be required to understand this issue, and this is discussed in the final section of this report.) Our data support that labels do stimulate increased observations. The typical sequence of behaviors is as follows:

- visitor enters area
- visitor watches animal
- visitor reads label
- visitor observes animal once more
- visitor may/may not read additional labels

Most successful at inducing visitors for extended observation are labels at Atlas Lion, White Tiger, and Kiwi areas as well as the indoor Aviary. The questions presented on the labels in these areas seem to challenge and engage the visitor's interest. Several times we observed an individual following the general pattern of behavior described above. But then the person reading the labels would return to nearby companions (who had not read the label) whereupon the label's question was posed to the group.

Comments most critical of labels were directed to those in the Reptile House. They were described as *"too long," "too small," "hard to read -- smudged," "too crowded together"* and *"broken."*

Learning by Direct Teaching

We saw visitors of all ages become teachers in the Zoo. Any time an individual took an active and direct role in imparting information to another, we identified that as an instance of direct teaching. For example, many times we observed children reading labels to their parents. In fact, we overheard children correcting their parents about animal identification in instances when children read the labels and the parents did not. In these situations, children were engaged in direct teaching.

We also identified two distinct patterns of teaching when parents assumed the direct teaching role. A mother with her young child or a group of young mothers with pre-schoolers are commonly seen. There is frequent mother-child interaction about the animals although the stop at the animal

areas is brief. Mothers explain that these brief stops result from children's short attention span.* Mothers center children's attention on the animals' activity and are overwhelmingly anthropomorphic in their discussions. The animal areas which feature mother and offspring pairs are most popular to these kinds of visitors. With the exception of the indoor Aviary, least popular are the enclosed houses, especially the Reptile House. (Mothers with older male children visit the Reptile House more frequently.) As with most visitors, mothers seek out highly active animals and in doing so attempt to impart at least one item of information for each area visited.

A second kind of teaching occurs when a whole family (mother, father and one or more children) visit the Zoo. Here the father assumes the direct teaching role. His comments are more directed to animal characteristics and specific behavior. While conversing with children, there was some use of label information but more reliance on outside information, both correct and incorrect (i.e. estimated weight, age, height, sex). There is significantly less anthropomorphic attribution. Fathers seem to linger more at any one area than other family members do.

We noted instances of direct teaching occurring among the many group combinations we observed (i.e. same sex group, mixed sex group, couples, school groups, etc.). People share their observations and insights spontaneously, frequently with enthusiasm and often with a sense of wonder.

Perhaps the most prevalent topics of direct teaching are those of conservation and extinction. Witness the following examples:

> *I read that the Indian rhino is near extinction. I told my son to get a good look at it. I find it hard to believe something that looks so tough is having trouble surviving.*

> *In zoos you learn a respect for life. I don't have much use for people who say, "It's only an animal." That can be applied by degrees to other humans different from them. So parents should teach them to respect all animal life.*

---

*This explanation is not accurate, however. Our own research in cognitive psychology suggests that attention span is merely an external indicator of a more fundamental cognitive process. It does not indicate lack of interest, but rather is indicative of where a child is in his/her cognitive development and what particular cognitive structure the child processes. For further explication of this point, see Tymitz, 1977.

I talk with my children about the fact that the animals are part of this earth along with us humans. Kids need to understand life, harmony and variety.

The materials written and presented by the Golden Marmoset are excellent in light of this topic of conservation. It brings the issue of status to the fore. (Points to meercat) It too will suffer the effects of man.

It is important to teach about protection. Animals are important; so are kids. Things that are helpless should be protected.

Teaching kids about endangered animals is important but it's hard. They know they weren't responsible and they don't have a clear sense of what it means when something is gone forever.

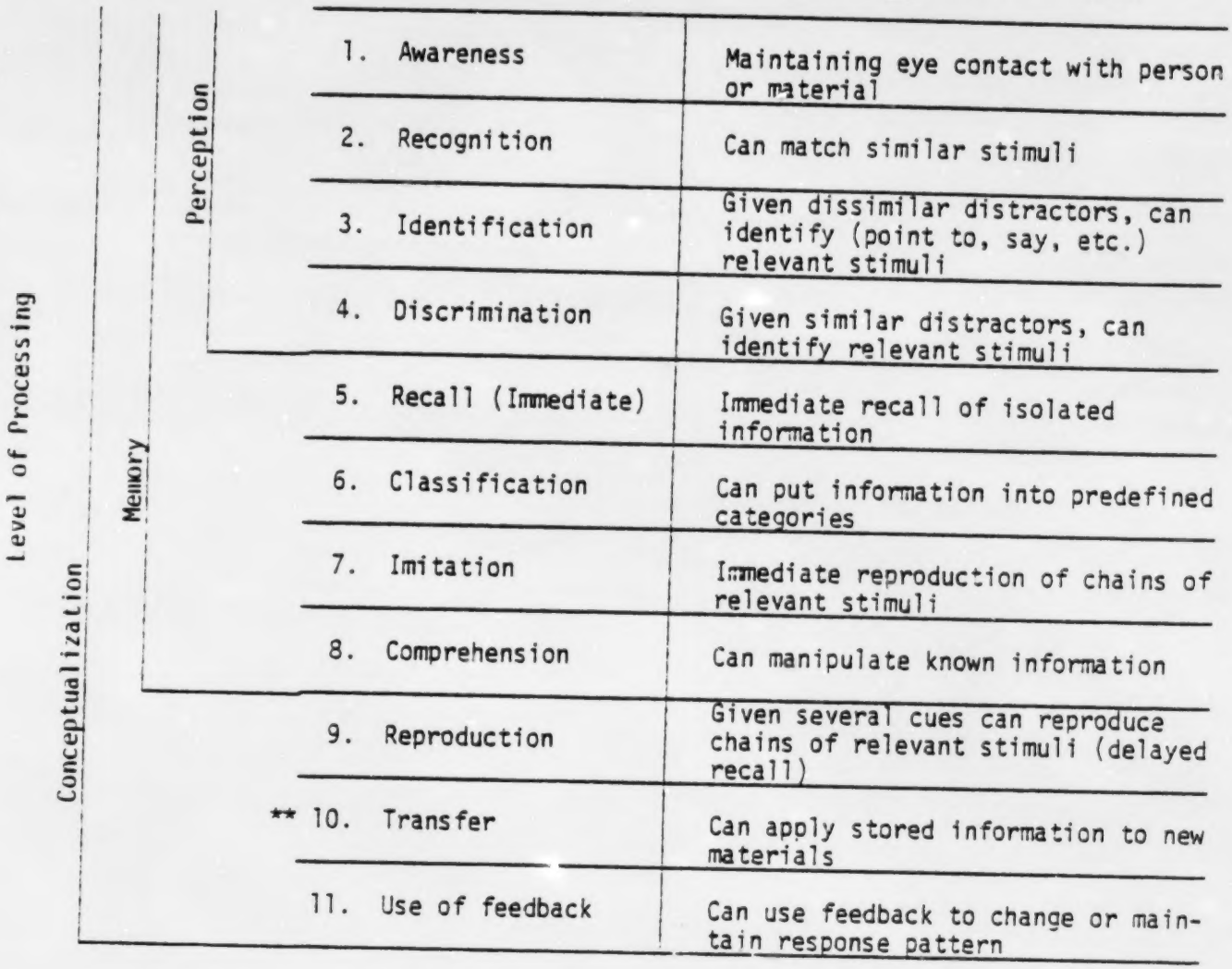
We wanted to learn something about these animals while they are alive. As long as one is alive -- but I guess you really need two, don't you? -- I feel better. I feel frustrated though because I feel like being able to save them is out of my hands.

I want to say to my kids, "Look what happened." There's more to it -- the same thing can happen to other things not just animals. We don't just have to preserve the animals, we have to preserve the <u>whole environment</u> so we all can survive.

In essence, visitors are interested in seeing the last surviving specimens while it is still possible or learning what the Zoo is doing to preserve and protect endangered species.

<u>Learning by Transfer and Comparison</u>

One of the highest levels of learning in any situation is that of transfer since it involves conceptualization and thought. (See diagram on following page for hierarchy of learning skills.) The ability to transfer is based upon all the skills which precede it in the hierarchy. Thus, one must be able to identify, classify, recall, etc. Essentially, transfer refers to the ability of applying related information from one situation to another. It is possible for a learner to transfer information both from


Level of Task Difficulty
Observational Definition
Level of Processing
Perception
Memory
Conceptualization
1. Awareness
Maintaining eye contact with person or material
2. Recognition
Can match similar stimuli
3. Identification
Given dissimilar distractors, can identify (point to, say, etc.) relevant stimuli
4. Discrimination
Given similar distractors, can identify relevant stimuli
5. Recall (Immediate)
Immediate recall of isolated information
6. Classification
Can put information into predefined categories
7. Imitation
Immediate reproduction of chains of relevant stimuli
8. Comprehension
Can manipulate known information
9. Reproduction
Given several cues can reproduce chains of relevant stimuli (delayed recall)
** 10. Transfer
Can apply stored information to new materials
11. Use of feedback
Can use feedback to change or maintain response pattern

Taxonomy for Instructional Programming

past experiences and from those that have just occurred. Transfer may occur as a result of direct or incidental learning. Thus, the visitor may be actively attempting to draw associations, make comparisons, etc. or this may occur serendipitously. The visitor who demonstrates transfer skills is, in some respects, the "ideal" visitor. This individual will move through the Zoo relating and comparing aspects such as: 1) species; 2) behaviors; 3) habitats; 4) animal origins; 5) attendant or guide comments; and 6) past zoo experiences. The concepts which seem to transfer the most are those of conservation and extinction.

Instances of visitor transfer were identified by first observing the visitors as they travelled between several areas, and then interviewing them as they began to move toward a new area.

Comments which reflect transfer learning are varied:

I've seen the tigers and the lions and the bears. I was wondering if the tigers and lions swim as fast as the bears. Their bodies have quite different weight distributions.

I'm interested in how long these snakes are when they are unrolled. I'm curious to know which one is the longest. Is there one part of the snake body that is stronger?

I was looking to see if I could figure out what the difference was between an alligator and a crocodile. By the way, what's the difference between a reptile and an amphibian?

We're amazed at all the different animals you have here that came from Africa. There seem to be a lot more from Africa than Central America.

The keeper at the monkeys told us the male monkey could distinguish between his male and female keeper. I asked the guy at the elephants if they did that too.

I heard the keeper by the swans say that experts hardly know how to tell the male parrot from the female. Is that the case with other animals? Is that why you don't tell if the animal is male or female?

It will be good when the habitat for the apes is as open as the one for the lions and tigers. They probably won't seem as nervous.

We saw the snakes and now the birds. It's amazing to see how creatures camouflage their colors for their environments.

The information about social structure is funny. They all sound alike to me from one animal to the next.

Years ago, there weren't any areas like this (panda enclosure). There are more and more changes for the better.

We like to go to different zoos. I am very interested that my kids see zoos that have more open spaces for the animals. Most of their library books show zoos keeping all the animals in cages, and I don't want them to get that idea. Even the newer books show the cages. That's a bad stereotype, and I want my kids to know that <u>this</u> is the way it should be (pointing to tiger area).

Yesterday I was in the Natural History museum. That's where the endangered animals end up when they become extinct. I was thinking about that today looking at the Atlas lion.

I read this zoo was very successful in breeding a kind of panda bear -- not the Chinese ones -- some others. I'd like to know whether the zoo is breeding other animals and how it's going.

I get the greatest feeling of all when I am in the aviary. The birds there are free. That makes me feel free -- it just makes my day.

I was thinking about how many giraffes there are in captivity compared to how many there are in the wild. The same for all these. I like to know how rare the animal is compared to others.

The only thing I wish the signs had on them that they don't already have is the size and weight of these animals. We were comparing the lions and the tigers; the tiger looks much bigger.

HOW AND WHAT PEOPLE WOULD LIKE TO LEARN

Toward the close of each visitor interview we sought information as to the kind of learning experiences that he/she would prefer during a zoo visit. Often it was unnecessary to pose this particular question since many visitors initiated the subject themselves. Visitors told us not only how they would like to learn but also what they would like to learn more about. The message that was consistent across the majority of respondents is the desire and receptivity for information. The following categories define the kinds of learning experiences people seem interested in.

Interaction

The visitors prefer an interactive experience at the Zoo. However, the interactive experience is not limited to that between visitor and animal. While it remains constant that people like to view animals at close range and that they attend more to the active animals, visitors identify other experiences which they would find *"interesting," "satisfying," "enjoyable,"* and *"more enlightening."* Namely, there is a strong preference for visitor interaction with animal keepers and roving guides. Few people want organized tours or structured speeches. They prefer a human source that will talk and answer specific questions. A casual but informed speaker is highly desirable as evidenced by the following statements:

> *I would have preferred to ask questions about things we saw that we didn't understand. We couldn't figure out why there were mice in the Bird House. Are they food for the birds? Why are there monkeys in the Elephant House?*
>
> *Guides are an excellent way for telling visitors about animals -- but only guides who stay in one area to talk about certain animals, not the walking tour kind.*
>
> *I would like to talk with the keepers too. I did once. It was the best time I've had in a zoo.*
>
> *It would be neat if there was someone here who knew all about the monkey like a keeper. If there were people around who knew the animals it would be more interesting because then you could understand why the animal is doing what he is doing, expecially for the larger apes since there was that woman who taught a gorilla to talk.*
>
> *I enjoyed talking with the keeper. It's more educational than just looking.*
>
> *It's meaningless to take animals out of their habitats and not provide information on them.*

Because of my interest in taking care of animals, I wish there was a keeper or somebody here to talk with.

I saw a couple of keepers around and would like to know more about what they do.

Sometimes I have unanswered questions. I'd like someone at specific hours to talk about the animals, but not someone constantly because that would draw a crowd and obscure the animals.

The signs give basic facts -- which is good -- but talking with a person who's involved with the animal provides more of a give and take of information. Signs give no feeling of the amazing things about animal behavior that enable you to put what you've learned into perspective.

I'd really like to be able to walk up to a person who knows a lot about the animals and ask him questions.

I like to talk to people more than read. Besides, people don't break down like movies or get messed up by the weather. Real people make the animals real -- the whole thing becomes real.

It should be noted that we did observe indications of visitor interest in this form of information giving. As stated earlier, when keepers or guides responded to visitor questions, small crowds gathered and were attentive. We also recorded examples of visitors conveying content from these interactions to their companions who had not heard the interchange. It was also common to hear children continue to ask their parents questions after leaving an area where a keeper had spoken to the group.

Self-Guided Tours

Several visitors mentioned a preference for printed materials on the trails or how to conduct a self-guided tour. For those visitors following the trail system, a pamphlet or brochure providing more information (i.e., specimens of particular interest such as newborns, endangered, etc.) on that trail was a frequent request. Preliminary data suggest that those selecting a trail were somewhat more purposeful in their visit in contrast to the visitor who travels less systematically through the Zoo. Apparently trail selectors would like informational sources that allow them to check their progress along the trail accompanied by printed material reinforcing, repeating or extending already available label information. In addition, visitors are interested in a more detailed information source that will aid their choice of a trail to follow before they begin their walk. It is not always clear to the visitor what will be seen when only parts of the trail are followed. (We heard a number of visitors misidentify the animal on the pictograph, for example.)

Also, visitors ask numerous questions about following the Olmstead Walk, i.e. *"Will I see everything if I follow this red line?" "Are the lions and tigers on this path?" "What is the quickest way to get to the birds from the elephant area -- and still see a lot of animals on the way?"*

Episodic Information

A surprising number of visitors demonstrate a well-versed interest in the Zoo and its specimens. There was a stated preference that current information of particular note be made available near the animals such as a) plans for new habitat, b) plans for addition to habitat, c) pregnancy birth, d) new behaviors, e) on-going research at the Conservation and Research Center relevant to the specimen or species exhibited. Visitors indicated a desire for a "Zoo Special Events" board visible at pedestrian and parking lot entrances. Suggested information would include: 1) animal feeding time (in addition to brochure listing); 2) special film showings; 3) activities, i.e. Meet-a-Snake; and 4) hours for Zoo Lab, Bird Lab.

Visitors comment that while more information is desired, the format should not intrude on the naturalness of the zoo park. A few individuals suggested an audio guide system or film loops at the exhibits; however, these suggestions were noticeably outnumbered by persons who simply preferred more informal, casual, spontaneous information sources.

We recorded specific examples of what visitors would like to learn about. Below is a listing (in order of frequency mentioned) of information desired by visitors:

1) explanation of breeding procedures for species (success, frequency; intent of breeding/non-breeding)

2) details on endangerment of species (i.e. how they became endangered, prevention of extinction)

3) history of specimen (i.e. how long in zoo, how many offspring, location of offspring in other zoos)

4) animal habits (i.e. typical behaviors of specimen and species)

5) what to look for in animal's behavior (i.e. daily cycle including sleep, digestion, play)

6) zoo care (i.e. care for newborn, aged animals)*

7) given name of specimen

---

*While some of these topics are presented in the orientation film, visitors state a preference for information placed near or related to the particular specimen on exhibit.

"But if I ran the zoo,"
Said young Gerald McGrew
I'd make a few changes.
That's just what I'd do. . ."

If I Ran the Zoo
by Dr. Seuss

8, zoo research (i.e. what kinds of studies are being conducted with specimen, species, why such studies have been selected, findings of on-going zoo research, benefits of zoo research

9) identification of animal as same one described in news stories

10) exhibition/identification of local fauna (Note: This was indicated by local residents only.)

Identifying how and what people would like to learn can serve as a basis for program planning and exhibit development. In the section that follows, areas for consideration stimulated by visitor expressions will be discussed. Also, suggestions for future study will be identified.

AREAS FOR CONSIDERATION AND FUTURE STUDY

During the course of this study, we have been continuously provoked by thoughts that visitors shared with us concerning the Zoo--what it is and what it represents. Even when persons offered suggestions as to their likes and dislikes, they did so with an appreciation that this zoo exists and a belief in the value of the zoo experience. The considerations and suggestions that follow are provided with that same spirit. This section is divided into four sub-parts including the following: 1) Providing for Specialized Learning; 2) Guarding against Misconceptions; 3) Facilitating Transfer of Learning; and 4) Areas for Future Study. Each will be briefly discussed.

PROVIDING FOR SPECIALIZED LEARNING

As we have stated in previous studies, it is critical to recognize that people learn differently. When we say this we are not saying that people are simply interested in different things--for of course this is quite true. The distinction we are referring to is more fundamental. It relates to differences in cognitive process such as cognitive styles, cognitive structures and cognitive strategies. Style refers to how an individual categorizes information. Structures refer to the way the individual interprets information. Strategies refer to the manner in which the individual attempts to learn the information. The visitor who walks through the zoo and tries to name the animals is using a cognitive strategy--object identification. The visitor who tries to relate the animals one to the other is exhibiting cognitive style--object comparison. And the visitor who tries to explain animal behavior in terms of his or her experience demonstrates cognitive structure--object interpretation. Many use some combination of the three, some use all. While this represents a simple overview of more complex theoretical notions about cognition, it suggests that individuals using any combination of these processes can be appealed to effectively in a variety of ways. For example, people can be appealed to through exposure to animals, to print or pictorial media (i.e. film, videotape, graphic representations) and to messages that can be conveyed through the use of space. Within the zoo context, animals provide the concrete stimulus for interest. Given the notion that learners advance from the concrete to the abstract, zoo staff should continue to maximize the use of animals to convey basic information and more abstract concepts such as conservation and extinction. What we are suggesting is that if one accepts that people learn differently, then persons who choose to stimulate and/or educate must selectively maximize those opportunities through approaches which are known to provide differentiated learning opportunities. Thus providing different kinds of learning experiences can increase the probability of appealing to specialized learning needs that different visitors have. Based on visitor comments and our own insight we suggest the following as viable approaches to appeal to specialized learning styles.

Variations in Labels

As we reported under the section entitled "How and What People Would Like to Learn," visitors indicated a number of topics about which more information is desired. One means for this, of course, is the system of labels. It should be noted that visitors do not ask for longer labels but they do prefer that different kinds of information be available on the labels. There seems to be less of an interest in what visitors call "technical" terms and more of an interest in the particular specimen or species. For example, visitors seem unconcerned about the Latin name for the animal. Those that do attend to this item suggest a pronunication key. There are some successful uses of different kinds of labels as exemplified by the visual keys at the Lion-Tiger area. The effectiveness of these labels cannot be understated. We found that people attend to, recall and transfer this information accurately. We would encourage increased use of this style of label.

The observation behaviors of the ordinary visitor can be maximized through varied labels.

1) Some labels might ask a single question: Are the panda's markings all one color?

2) Other labels might challenge the observer: Can you find the oldest turtle?

3) Labels can stimulate comparison: What is the difference between a seal and a sea lion?

4) Labels can teach the observer to observe: Watch the elephant pick up the food. See if the opening of the trunk moves. Now watch how the elephant uses his trunk to place food in his mouth.

5) Labels can stimulate use of other senses for learning and observing: Listen to Gibbon. What happens to his body when he makes that sound?

Still other labels can stimulate interaction or identify an unanswered research question.

A system of movable labels might also be considered since many of the visitors make repeated trips to the Zoo. Labels might be designed so that they can be changed seasonally or changed to provide new information about the specimen/species.

Use of Zoo Guides and Keepers

Many visitors indicated an interest in being able to listen to and ask questions of keepers or guides. These visitors stated that a sign cannot always answer their specific question and that a human source is preferable. This visitor interest reflects an alternative way of learning--that of receiving information auditorially, via a spoken verbal source. Further, the visitor has the opportunity for quick feedback to questions and the chance to check accuracy of interpretations or observations.

The effectiveness of interchanges between guides/keepers and the visitor was strongly supported in our observations and interviews. Most visitors readily welcome input from a source more knowledgeable about the species or more familiar with the specimen. When information is provided by the keeper or guide, the visitor is able to observe simultaneously. In learning terms, the visitor is receiving multisensory stimulation, a long-recognized approach for effective learning.

Keepers or guides can do what many signs cannot. They can remain current, extend information, appeal to a broader age range as well as attract those who, for one reason or another, are unable to read the labels (handicapped, young, those from foreign countries).

The sum of visitor comments and our own observations suggest that an effective guide or spokesperson is one who: 1) is informed, 2) can present information interestingly, 3) has the ability to respond to the same question as if it were asked for the first time, 4) provides casual remarks rather than a structured speech, and 5) is friendly and courteous.

Written Materials

Frequently, visitors commented on the availability of printed materials in the Zoo. These remarks ranged from general requests for maps at all Zoo entrances (particularly during the fall and winter) to requests for reports of on-going research with a particular species. Visitors would like simple to read brochures to use while touring the Zoo and more detailed information about the Zoo and its exhibits to read at a later time. Our data suggests that for materials to be used in the Zoo or to be read later, interest in the particular specimens is most salient, followed by more generalized interest in the species. The requests for written material on breeding research indicated that the majority of visitors are unaware of the Conservation and Research Center. Visitors are curious about where and how captive breeding occurs. Interest in this topic is usually accompanied by a desire for materials on species conservation and extinction.*

Parents requested specialized printed materials to use with their children during the visit. They noted that much of the label information is *"somewhat advanced"* or *"not interesting"* to their children and that other information about the animals would make their visit *"more educational."* The mention by parents for child-oriented printed materials suggests that the label information as stated may be at an advanced level of abstraction for many children. This is not to say that the labels should be child-oriented, rather that printed material might supplement the present labels. This resource would allow parents to either interpret present labels and/or provide additional information more congruent with the child's cognition and experiences.

Visitors expressed interest in learning about different ways to tour the Zoo. Given the popularity of repeated visits, this is indeed an area for consideration. New tours could be offered through printed materials or by guides.**

We encourage the planning and design of tours along a variety of dimensions, such as:

1) a tour that portrays conservation and extinction within or across species

2) a tour that introduces examples of animals phylogenetically

---

*Note: We did not ascertain whether visitors who expressed this interest had purchased the Zoo Book, which contains information on these topics.

**Visitors suggested that guided tours be shortened and the presentation more informal.

3) a tour that emphasizes a collection for a specific geographic region

4) a tour "for tired feet" exposing visitors to select exhibits

5) a tour that poses a question for the visitor to answer as a result of following a particular path

6) a tour that includes both old and new sections of the Zoo

7) a tour that emphasizes variation in Zoo habitats

8) a tour focusing on jungle species, forest species, aquatic species, etc.

9) a tour that includes the Bird Lab, Zoo Lab, Meet-a-Snake, etc.

The ideas for many of these tours are presently included in the school tours. Extending their availability will offer increased opportunities to respond to specialized interests and ways of learning for the general visitor.

In conclusion, suggestions on the format of the written materials were offered by the visitors:

. they should describe facts about the animals on exhibit

. the information should be simple to read for use while touring the Zoo

. the cost should be nominal ("*at least 10¢*" or "*just enough so that they will not be easily discarded as litter*")

. they should be available at Zoo entrance and near the respective trail or specimen

GUARDING AGAINST MISCONCEPTIONS

As documented earlier in this report, many visitors have erroneous conceptions about specific animals, about animal habitats, and about the Zoo in general. While it is almost impossible for the Zoo staff to eliminate all of the misconceptions people have, it is possible to develop some strategies to help reduce the amount of inaccuracies. This is an important task because oftentimes visitors' misconceptions provoke criticism of the Zoo that is totally unwarranted.

Our analysis suggests that there are a number of apparent issues related to visitors' misconceptions. For one thing, many visitors are totally unfamiliar with the animals to begin with. Even avid zoo-goer, who happen to have a fair amount of background information, are unfamiliar with some of the tacit or subtle dimensions of specific animals' behavior. Moreover, most visitors are uninformed as to what constitutes the best conditions under which the animals must be kept in order for them to not only survive but thrive. Likewise, visitors are unaware of how species differ from one another and, therefore, make comparisons that lead to false perceptions. These are but a few of the underlying causes of erroneous interpretations. Basic unfamiliarity, a lack of adequate information about the different animals, their habits and the conditions of optimal existence in captivity, and little opportunity to correct their false impressions all serve to aggrevate the problem.

Several possibilities exist, however, to help overcome these difficulties. And as stated, it would be in the best interest of the Zoo to mitigate the potential for misconception and inaccurate interpretation. In the preceding section we discussed the increased and expanded use of roving guides and keepers to facilitate visitors' learning. This suggestion has even more saliency given the tendency to misinterpret or formulate inaccurate conclusions about the animals and their habitats. Increasing the number of roving guides, expanding their roles, helping to make the public more aware that such guides exist, and teaching visitors how to take better advantage of such resident staff are all important points for consideration. Likewise, impressing upon keepers the potentially critical role they can play in correcting misconceptions and facilitating meaningful visitor learning would be important to consider as well.

We would strongly advocate that both roving guides and animal keepers be given training in certain pedagogical techniques that could enrich the significant educational role they perform. Such training may already exist. If it does not, it should most certainly be initiated. Providing help in responding to questions so as to encourage even more questions, learning how to ask visitors questions so as to help structure their learning, and developing skills in small group interactions would all be extremely important elements in any training process.

Another strategy that could be employed in trying to reduce inaccurate understandings would be to increase the amount and kind of information offered through labels and/or other forms of mediated presentations. What is important here is that common misconceptions, described earlier, be addressed specifically in developing new kinds of information for visitor consumption. A previous sub-section of this document concerned labels, but labels are not the only route to follow. In fact, one visitor participating in this study identified a particularly intriguing method to provide visitors with additional information. He briefly described a telephone dialing system in a California zoo that could be tapped into through phones provided around the zoo park, or could be direct dialed from any public or private telephone line. Our extension of the concept follows. Once the visitor makes the call he/she is connected to a zoo staff person. The visitor would then identify certain questions and/or additional information needs and an appropriate tape would be selected for the visitor's listening attention. If after listening to the pre-recorded message the visitor is still puzzled or is still interested he/she could stay on the line and be provided with the name and address of a person the visitor could contact for further clarification. Obviously, most people would not track information this far, but at least the very interested visitor would have the opportunity. For the Zoo, this entire process would be fascinating because visitor questions and information requests could be documented. Such documentation would provide staff with an up-dated system of monitoring visitor concerns and interests.

All of the suggestions described above could help reduce the amount of misconception that exists. Helping visitors to become more aware of the research and development projects underway at the Conservation and Research Center would help as well. In our early discussions with Zoo staff many seemed to indicate a certain frustration with visitor proclivity for anthropomorphism. We now suspect that such anthropomorphic behavior on the part of visitors occurs because they do not have a better way to respond or react to what they observe. It is clear that zoos have come a long way from the Sunday recreational parks in Western Europe. With issues such as conservation and extinction so much on the public's mind, the responsibilities of zoos must shift and their educational role must become dominant in order to better justify their existence. Finding new ways to educate and inform the public, as well as to clarify the misconceptions that exist, now become an imperative.

In the sub-section which follows, suggestions for how the Zoo can help visitors integrate and transfer information across their entire zoo experience will be explored.

ON THE ISSUE OF TRANSFER

Transfer is defined as the ability to apply stored information to new materials. Given this definition, it is clear that the above mentioned areas of consideration imply suggested ways to stimulate the visitor's behavior to draw associations, make comparisons, integrate present and past learning, etc. We offer that the Zoo staff efforts to facilitate transfer are not only appropriate but necessary; for opportunities that allow the individual to integrate or "pull together" his/her observations create a powerful and long-lasting learning experience. But often the visitor needs "help" at this.

In our opinion, the Zoo staff should take active and direct efforts to facilitate people's learning. Any message that the Zoo chooses to convey should be clear to the visitor. Subtleties that the visitor might learn can be given over to incidental learning but primary messages or themes should not be. While we have found that people enter the Zoo gates with many expectations, we have also learned that they are of a more singular accord in their receptivity to information about the animals and the Zoo's contributions to the vast realm of animal life.

There should be ample provisions in the Zoo for repetition of a message. The visitor should have the opportunity to be sensitized to a primary message through a variety of exhibits and learning experiences (labels, brochures, guides, labs). Repetition increases the likelihood of learning regardless of age. Furthermore, it helps to guard against misconceptions.

Both the public and the Zoo stand to benefit from more direct approaches to learning in the Zoo. Because zoos exist as unique environments, the learning experiences they offer cannot be obtained elsewhere. Books and films are, as visitors remarked, not quite the same. However, a trip to the zoo remains an uncommonly special event for most visitors. Ironically, the public is the captive audience in the zoo. The final section of this report will provide suggestions for future study about visitor behavior and visitor needs so as to maximize the learning potential for each visitor's zoo experience.

FUTURE STUDY

During the course of this investigation many fascinating issues emerged that were not central to the purpose here, but were clearly significant in their own right. Likewise, some of the conclusions we came to from our own data provoked new questions and generated additional areas for future study. The purpose of this section is to identify a number of potential studies that could be undertaken so as to continue to provide systematic information for guiding on-going decision-making and for developing future plans and exhibits. These studies relate to visitor preferences, visitor profiles, specific things visitors learn and opportunities for the handicapped.

In the area of visitor preference studies two issues emerged that warrant further investigation. One issue concerned the Trail System, the other concerned Species Density vs. Specimen Density. Regarding the Trail System, there appeared to be a wide range of perceptions regarding the viability of visitor trails. We believe that since the Zoo has invested a great deal of faith in the Trail System, more systematic study of its overall effectiveness would be useful. Such a study could first aim to discover whether people even understand the System. If it is not understood, at least by some, then probes into how it could be made more comprehensible would be in order. If it is understood, on the other hand, then descriptions of how it is used and what is gained from its use would be important to document. Mostly, however, a study of the Trail System should focus on how it influences or impacts upon learning. Does orientation facilitate learning? Does the System help certain kinds of visitors maximize their learning opportunities? These kinds of questions would be important and could serve as focal points for systematic investigation.

The other visitor preference study concerns species/specimen density issues. We talked with many people who suggested that the Zoo needed a larger range of different kinds of animals. We also talked with many persons who suggested that the Zoo acquire more animals of the same species. Our feeling is that it may be important to poll visitors systematically on this issue so as to help guide future policy. Perhaps informing all visitors about the breeding activities at the Conservation and Research Center would be helpful. But in any event, documenting visitor preferences on the species vs. specimen dichotomy would be informative.

Another area for future inquiry would be the specific role that labels play in educating the public. In this current investigation we learned that people do, in fact, read labels. We did not, however, attempt to ascertain what specific learning could be attributed directly to label presentations. Since visitors do express interest in labels, and since we spent considerable time earlier discussing how labels could be altered to maximize learning opportunities, it seems appropriate therefore, to

suggest that more concentrated effort on understanding exactly what visitors learn from labels would be helpful. This is particularly true if additional labels are being developed or existing labels are being modified.

In addition to the studies concerning visitor preference and label learning, another issue for future investigation concerns visitor profiles and characteristics. Do zoo professionals know what makes a good zoo-goer? Does anyone know how a zoo-goer is created? Or, who does not go to the zoo? Our study was not designed to focus on different types of visitors, but our observations most certainly revealed that people do experience the zoo in different ways. We believe, therefore, that more in-depth and focused inquiry be applied to understanding the visitor characteristics and ultimately how different characteristics differentially affect what is learned and/or what is experienced. Earlier in this document we reported that 84 different visitor constellations were identified. We now suggest that small samples of visitors be selected from some of those constellations and that those visitors be tracked throughout their entire zoo visit. After this protracted observation, in-depth interviews should be conducted having the visitor explain as specifically as possible what he/she perceived and why he/she engaged in the behaviors documented. The emphasis here would be on developing profiles of different kinds of visitors and understanding how different patterns of behaviors relate to zoo impact.

One final suggestion for further study is somewhat unrelated to the others, but is nonetheless critical. We did not observe many handicapped persons during our months of data collection, and those we did observe seemed to experience some degree of difficulty at the Zoo. Given the recently enacted federal legislation we are curious as to what the Zoo is planning to do regarding the architectural barriers as well as the educational opportunities for the handicapped. If it is not already in process, we would strongly urge that some feasibility study be initiated to attend to this important area of concern.

CONCLUSION

As the title of this report implies, the Zoo means many things. And, it means different things to different people. Essentially, the Zoo is no more than what people perceive it to be. Persons who work at the Zoo can be content in knowing that almost all who visit it are satisfied with the experience, and as our data reveal, most even learn some things. But being content is not the same as striving for new ways to impact positively upon the public.

Visitors indicated a definite and remarkable curiosity. It is fair to say that never before in our expreience have a group of consumers been so provoked for additional information and so stimulated as evidenced by the questions they pose. We view this as a marvelous opportunity for Zoo staff to capitalize on the interest that already exists and reflect upon the insights that visitors shared with us in creating new strategies for public awareness and visitor education.

BIBLIOGRAPHY

Tymitz, Barbara L. "Exploring 'Cognitive Learning Behaviors in Young Children." Paper presented at the Annual Meeting of the American Educational Research Association, Toronto, Canada, April, 1977.

Wolf, Robert L. and Barbara L. Tymitz. "Ethnography and Reading: Matching Inquiry Mode to Process." Reading Research Quarterly, September, 1976.

Wolf, Robert L. and Barbara L. Tymitz. "Towards More Natural Inquiry in Education." CEDR Quarterly, October, 1977.

Wolf, Robert L. and Barbara L. Tymitz. "Things to Consider When Evaluating Museum Programs." Paper presented at an evaluation meeting at the Smithsonian Institution, November, 1977.

Wolf, Robert L. and Barbara L. Tymitz. "What Ever Happened to the Giant Wombat: An Investigation of the Impact of the Ice Age Mammals and Emergence of Man Exhibit." National Museum of Natural History, Smithsonian Institution, May, 1978.

Wolf, Robert L. and Barbara L. Tymitz. "A Preliminary Guide for Studying Museum Environments." Office of Museum Programs, Smithsonian Institution, Fall, 1978.

Wolf, Robert L. and Barbara L. Tymitz. "New Perspectives in Evaluating Museums: An Annotated Bibliography." Office of Museum Programs, Smithsonian Institution, Fall, 1978.

Wolf, Robert L. "Conceptual and Operational Considerations in Naturalistic Evaluation." Invited Address. Annual Meeting of the American Educational Research Association, San Francisco, California, April, 1979.

APPENDIX

VISITOR STUDIES IN ZOOS

We have perused the literature concerning studies that have been done in zoos and zoo-like environments (aquariums) over the past four years. The design and focus of these studies were identified. The following studies were reviewed:

Hodges, Suzanne. "A Behavioral Evaluation of Zoolab Visitors." Unpublished manuscript. Washington, D.C.: National Zoological Park, 1978.

Kwong, Diana. "The Crowned Crane Trail Study." Unpublished manuscript. Washington, D.C.: National Zoological Park (Office of Education-Information), 1977.

Kwong, Diana. "Lion-Tiger Area Observation." Unpublished manuscript. Washington, D.C.: National Zoological Park (Office of Education-Information), 1977.

Kuehl, P. "An Analysis of Visitor Socioeconomic, Behavioral, and Attitudinal Characteristics at the National Zoological Park," Unpublished manuscript. Washington, D.C.: National Zoological Park, 1976.

Serrell, Beverly. "Survey of Visitor Attitude and Awareness at an Aquarium." Curato , 1977, 20, 48-52.

Serrell, Beverly. "Visitor Observation Studies at Museums, Zoos, and Aquariums." A paper presented at the annual meeting of the American Association of Zoological Parks and Aquariums, Denver, 1978.*

Willis, Jill Rae. "Visitor Analysis at the Cincinnati Zoo with Implications for Interpretive Planning." Unpublished Masters Thesis, Ohio State University, 1977.

In reviewing the above studies, questionnaire-type surveys were found to be the most commonly used method of data gathering. Studies employing unobtrusive observations without visitor interaction were next frequent. Use of open-ended interviewing of visitors in respect to their total experience at the zoo, such as the study reported herein, was not found. Rather, limited specific concerns were focused on, such as traffic patterns, reading of labels, reactions to particular animals, and negative behaviors (feeding, touching, etc.).

---

*Serrell identified the use of questionnaire-type surveys in the following zoos: National, Brookfield, Indianapolis, Henry Vilas, Philadelphia, San Diego, Topeka, Fort Worth, Toronto, Woodland Park.

Serrell also identified the use of unobtrusive observations in the following zoos: Brennan at Brookfield Zoo (social interactions), Kwong at National Zoo (Tiger/Lion and Crowned Crane Trails), Hodges at National Zoo (Zoo Lab) and Thompson at San Diego Zoo (negative behavior).